

course, no real objection to this, because a minimum of gas and oxygen may be used. Recently, the use of procain and nupracain has secured a much longer anesthesia than procain alone.

Transsacral anesthesia is the ideal one for perineal prostatectomy.

✱

A. M. MEADS, M.D. (251 Moss Avenue, Oakland.—Doctor Johnson's paper on caudal and transsacral anesthesia gives us an excellent review of the subject, and of his personal experience. There is no doubt that this type of anesthetic, from the urologic point of view, can be most satisfactory where surgery of the bladder and of the prostate are concerned. However, there are certain drawbacks in its practical application which have made me, although once enthusiastic about it, rarely use it now.

Some years ago, on visiting the Mayo Clinic, I found that practically all operations on the lower urinary tract were carried out under caudal and transsacral anesthesia, the anesthetic being administered by a trained anesthetist with about 20 per cent failures. A year ago, however, on visiting the Mayo Clinic again, I found that on the urological service caudal and transsacral anesthesia had been entirely replaced by spinal anesthesia; not because the former was not satisfactory, but because spinal anesthesia gave equally good results, with no more mortality or severe reactions. Furthermore, the percentage of failures from spinal anesthesia was decidedly less than that with the caudal and transsacral anesthesia, and the area anesthetized was so much greater that the use of local anesthesia in the suprapubic area was unnecessary.

My personal experience with this type of anesthesia began some years ago, and my results in the first few instances were so satisfactory that I grew enthusiastic. Then one of my cases developed a convulsion on the table during the injection of the novocain solution into the sacral canal, causing me considerable anxiety. Later we had failures in several of our private cases, which were extremely annoying both to the patients and to me. We also found the technique difficult and time-consuming, as we had no anesthetist trained in this method.

On taking up spinal anesthesia again, we found that we saved much time thereby, had far fewer failures, and no more serious reactions than when we were using caudal and transsacral anesthesia.

Caudal and transsacral anesthesia will probably never be popular except in institutions where trained anesthetists can administer it and have the patient ready for the operator at a given time. However, as Doctor Johnson has said, when once administered properly, there is no better anesthetic in selected cases.

✱

CHARLES F. McCUSKEY, M.D. (2439 North Commonwealth Avenue, Los Angeles).—The factors influencing the selection of an anesthetic agent or method vary according to the individual patient and surrounding circumstances. Too frequently the ultimate selection is determined by the inability of the attending anesthetist to produce satisfactory anesthesia of the type indicated. When a surgeon or anesthetist allows this situation to arise, they are relegating the welfare of the patient to a position of minor importance. The type of anesthetic used on each case should be given the same consideration as the type of operation contemplated, taking into consideration at all times the patient's comfort and safety during and after the surgical procedure.

The success of regional anesthetic procedures is dependent upon the skill of the anesthetist in producing anesthesia with a minimal amount of pain. Unlike general anesthesia, the patient is capable of judging the success or failure of the procedure. When the site of operation is limited to the area innervated by the sacral nerves, it is very unusual to find a patient postoperatively who has not been pleased with the anesthetic procedure. In a series of over eight thousand operations performed under caudal and transsacral block anesthesia administered by my associates or myself, approximately 95 per cent had satisfactory anesthesia. For operations on the rectum, excluding posterior resections, better than 99 per cent successful anesthesia can be obtained.

Untoward reactions to procain may be due to an intravenous injection or to a rapid absorption of the solution. An intravenous injection of procain is characterized by temporary loss of consciousness, with or without convulsions, respiratory depression or paralysis, and slowing of the pulse rate to forty or less beats per minute, the degree of these symptoms depending on the amount of solution injected.

Symptoms due to rapid absorption of the procain come on slowly and are characterized by pallor, nausea with or without vomiting, slowing of the pulse rate, and the usual appearance of shock.

The administration of oxygen and carbon dioxide is usually sufficient to overcome these symptoms. If sufficient procain has been injected to paralyze respiration, this must be done promptly by artificial respiration until normal respiration is restored. Procain is broken down in the liver to one of the acids of the paramino group and then eliminated through the kidneys. For the milder type of reaction, the administration of caffeine sodium benzoate or adrenalin may be sufficient. Severe untoward reactions are very uncommon and the milder type occur in less than 0.5 per cent.

RUPTURED APPENDIX IN CHILDREN: ITS MANAGEMENT*

By CONRAD J. BAUMGARTNER, M.D.
Los Angeles

DISCUSSION by William J. Norris, M.D., Los Angeles;
Ezra S. Fish, M.D., Beverly Hills; George Thomason,
M.D., Los Angeles.

THE subject of appendicitis, though admittedly well worn, continues to present many serious and important features; particularly so when dealing with children. It is obvious that the public at large, and physicians to no small degree, are as yet not aware of the possible seriousness of the average so-called "stomach ache" in children. In a recent series of one hundred consecutive operated cases of appendicitis in children, occurring at the Children's Hospital, we find an appalling number ruptured, namely, 55 per cent, eight of whom had a generalized peritonitis which proved fatal in five. The explanation lies simply in the failure of parents and, at times, physicians to appreciate early the danger that might exist in the simple complaint of the child, of "pain in the abdomen."

In the series mentioned twenty-five, or almost half, were not admitted to the hospital until after the fourth day, and only three came in within the first twenty-four-hour period; while of the thirty-six acute cases that had not gone on to rupture, twenty-one, or 60 per cent, came into the hospital within twenty-four hours after onset of symptoms, and only four later than four days. The younger the child the less likely will its abdominal pain receive early serious consideration. In the nonperforated acute group, the average age was nine years and the youngest child five, while in the perforated cases the average was six with twenty-five children less than five years of age. The not infrequent association of sore throat, nasal colds, and middle-ear infection with the onset may further lead to a mistaken diagnosis and delay, and physics continue to be given in most cases. In this series nine children had a

* Read before the General Surgery Section of the California Medical Association at the sixty-fourth annual session, Yosemite National Park, May 13-16, 1935.

severe cold or sore throat at the onset, one had an otitis media, one had pneumonia, and another had an empyema; and at least twenty-nine had been given physics. The presenting complaints were quite varied. Some 76 per cent complained simply of pain in the abdomen, while in the remaining number the complaints were scattered among the following: fever, sore throat, sick, pain in the navel, and vomiting; and in only 12 per cent was the presenting complaint "pain in the right side."

PHYSICAL FINDINGS

As to the physical findings: localized tenderness and rigidity occurred in 80 per cent, with some generalized tenderness in 50 per cent, generalized abdominal distention in 25 per cent, and a palpable mass in about 25 per cent. Acutely inflamed throats were present in six (10 per cent), two had signs of pneumonia, and one an empyema. The average white count was 20,432, as compared with an average count of 16,692 in the acute appendix. The urines of only nine were negative throughout; twenty-two had an occasional pus cell; three had numerous pus cells; eight had an occasional red and pus cell; albumin was present in four, and acetone almost without exception. These findings, as given, obviously have nothing to do with the management of the ruptured case. I am merely pointing them out to show the various pitfalls that allow such a high proportion of children to go on to rupture.

OPERATIVE PROCEDURES

Notwithstanding that there had been serious delay in bringing the children to the hospital, the interval from admission to operation was only an average of six hours. Although I believe it is quite universally agreed that operation should be delayed until localization has taken place in an obviously spreading generalized peritonitis, yet one should weigh heavily the possibility of a localized lesion becoming generalized while procrastinating.

The type of incision in this group was about equally divided between the classical McBurney incision and some type of right rectus incision. Though the duration of stay in the hospital was somewhat less in the former, it is quite evident that in the right rectus group we were dealing with children seriously ill, and with a greater percentage having a generalized infection. McBurney's incision is, however, to be preferred in cases of well-defined localized abscess where one can cut directly down on the abscess without opening the general abdominal cavity.

The appendix should be removed in all instances where one can do so, without mauling and without getting into clean territory. In this series the appendix was removed in forty-six of the fifty-five cases. Drainage was established in all fifty-five patients, including the eight with generalized peritonitis. While I am not convinced of the value of drainage in generalized peritonitis, it is obvious that drainage continues to be considered the method of choice at the Children's Hospital. The ruptured appendices can be roughly placed into three groups: (1) The group in which there is a

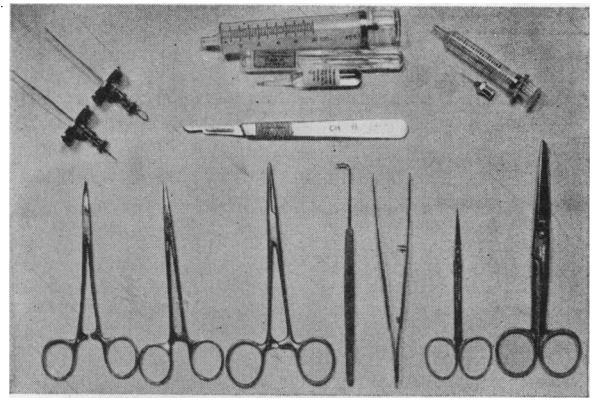


Fig. 1.—Tray setup showing armamentarium used for venotomy.

well walled-off abscess, where only local drainage is necessary. (2) The group in which there is only moderate walling off, with localized peritonitis. In this group I prefer to place one Penrose drain in the right gutter, one in the ileocecal region, and one to the pelvis. (3) The generalized peritonitis group. In these one should either not drain at all, or copiously.

Frankly, I do not believe that we have made any advancement whatsoever in operative technique in the past fifteen years. There has been, however, one distinct singular advancement in the postoperative care of these children. I refer to the use of the continuous glucose drip, or venoclysis, in association with the indwelling nasal tube.

CONTINUOUS GLUCOSE DRIPS VENOCLYSIS

Without exception every child with a ruptured appendix has acetone in the urine. Formerly the administrations of fluids and the combating of ketosis, toxemia, and hypochloridation had been a notoriously haphazard routine in children. Protoclysis was not tolerated at all in children, hypodermoclysis poorly, and repeated intravenous injections were most difficult to administer. Since the introduction of the slow glucose drip by Matas, this method of administering fluid has been in constant use in the various departments of the hospital with, I believe, universally gratifying results.

Armamentarium.—The armamentarium used is relatively simple, as shown in the illustration (Fig. 1). A separate tray is set up, having chiefly small scissors, mosquito forceps, a small Bard-Parker knife, a small aneurysm needle, 00 catgut and several intravenous needles of different sizes. The solutions and apparatus which we have been using is that prepared by Baxters, which consists of an inverted bottle with air-vent tube, tubing and clamp, and a drip bulb somewhat like the Murphy drip, but without the hole in it.

Technique of Venoclysis.—Having decided to use the drip method, it is best to start it while the child is still under the anesthetic on the operating table. In order to save time an assistant may work simultaneously on this while the operation is in progress.

In children it is decidedly simpler to use a vein in the leg than one in the arm, as it is easier on

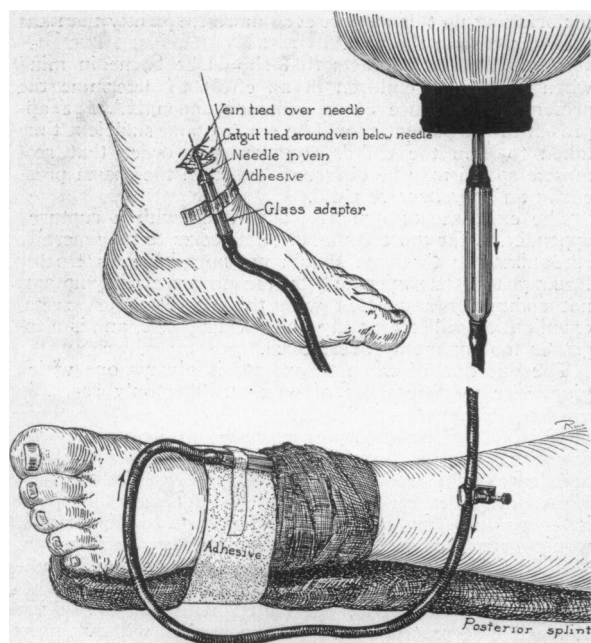


Fig. 2.—Upper sketch shows needle introduced into vein by cutting down just above internal malleolus. Lower sketch shows needle in place connected to venoclysis set and posterior splint applied.

the child, handling is facilitated, and there is not the likelihood of the child pulling it out. It has also been the experience of the residents in the hospital that phlebotomy is preferable to simple introduction of a needle into the vein, not only because of difficulty encountered in introducing a needle into the small vein of a child, but also because it has been felt that thrombosis and occlusion of the needle does not occur as soon where the needle is introduced through an incision and the vein tied, over and behind the needle.

The left leg, being the most accessible, is used (Fig. 2). A padded posterior splint is applied posterolaterally from heel to thigh. A tourniquet may be used, but is not absolutely necessary, as the great saphenous vein may invariably be found by cutting down just above the anterior portion of the internal malleolus. An incision, therefore, transverse to the leg is made about one finger's breadth above the anterior portion of the internal malleolus. The vein is identified and freed, and two 00 catgut sutures carried beneath, tying the most distal one above the vein and leaving the upper one to be tied over the needle after it has been inserted. A small V-shaped opening is then made with a small scissors, the needle is inserted, the glucose apparatus solution connected, and the upper catgut tied above the vein. A stitch or two may be taken in the skin, and the tubing secured to the leg with adhesive. The first 100 cubic centimeters of solution may be allowed to run in rapidly, and then the frequency of the drop cut down to the desired number per minute. The accompanying table was compiled by Dr. R. W. Mapes of the hospital, and shows a rough schedule for the amount of fluid given these children of various ages, and the estimated number of drops per minute necessary to maintain that intake (Table 1.)

TABLE 1.—*Outlining Amount of Fluid Given to Children*

Age	Solution	Amount in 24 Hours	Number of Drops Per Minute
Infants up to 2 years	5% glucose in normal saline	60 cc. per pound body weight	6 drops a minute per pound body weight
2-8 years	5% glucose in normal saline	1,200-1,500 cc.	75-95 drops per minute
8-12 years	5% glucose in normal saline	2,500 cc.	130-140 drops per minute

On completion of the anesthetic, with the patient still on the operating table, a nasal tube is passed into the stomach and secured to the side of the face with a strap of adhesive. After the child has been returned to its bed (Fig. 3), the leg is elevated and the drip per minute regulated. The nasal tube, carried to one side of the bed, is left open for constant drainage, and the nurse is instructed to lavage every two hours with two ounces of five per cent soda solution. Wristlets are then applied as illustrated, allowing plenty of freedom, but preventing the child from pulling out the nasal tube or getting at the dressings. We have allowed these children to take sips of water as they wish, since none of it is retained; it gratifies their thirst, and acts as a gastric lavage. By this simple method of treatment the patient is quite comfortable, ketosis disappears within twenty-four hours, a proper chlorid fluid and glucose intake is established, distention is reduced, and the necessity of enterostomy becomes practically nil. Both the nasal tube and glucose apparatus are, as a rule, retained for about four days without trouble. With the apparatus used, glucose reactions are indeed rare. I am informed by Doctor Hyland that he has encountered one fatal anaphylactic reaction, and one in which emboli were present in the leg which could possibly have been attributed to the venoclysis: this out of several thousands that have been given in the hospital in the past five years.

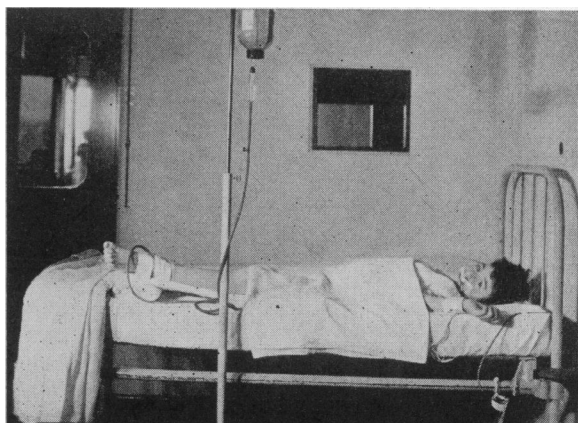


Fig. 3.—Photograph showing glucose drip setup and nasal tube inserted.

We have felt that pitressin has helped in the prevention of postoperative distention and paralytic ileus. Potter and Mueller of Bellevue Hospital have shown that the effect of the drug was merely that of maintaining tone, and that there was no clinical evidence of increased peristalsis. The amount given varies according to the age of the child. A fourth to a half cubic centimeter is given every four hours for three days, the first dose being administered directly following the operation, when copious hot packs to the abdomen are, likewise, begun. For postoperative sedatives the insertion of a rectal suppository, containing three-fourths grain of sodium amytal for infants below two years and one and one-half grain for older children, gives gratifying relief. This is fortified by codein or morphin, bearing in mind the danger of giving morphin to the infant.

POSTOPERATIVE COMPLICATIONS

Postoperative complications are varied and must, of course, be managed as they appear. In the series a fecal fistula developed in one which closed of its own accord. In another, after the drains had been removed on the seventh day, an abscess formed, which four days later spontaneously ruptured into the bowel. Another case developed an acute intestinal obstruction on the fourth day. Two children developed postoperative pneumonia. One developed an acute mastoid, and another developed an acute middle ear. A subdiaphragmatic abscess with a secondary empyema occurred in one. Bilateral parotitis, with recovery, occurred in one. Of the eight cases of generalized peritonitis, three recovered and five died.

CONCLUSIONS

The high incidence of 55 per cent of perforated appendices in children is due almost entirely to delay. If we are going to get anywhere at all in reducing this appalling percentage, it is up to the medical profession to repeatedly remind the public of the possible danger of appendicitis in any ordinary so-called "stomach ache" in children, and to persistently warn against the promiscuous use of laxatives before appendicitis has been definitely ruled out. So far, certain insurance companies and drug firms have carried on a distinct educational campaign in this regard, but the medical profession has not undertaken any definite educational program in this respect.

The frequent associations of nasal colds, sore throats, and middle-ear infections are particularly misleading, and parents as well as physicians must realize that their presence with an abdominal pain does not necessarily rule out appendicitis.

The use of the continuous glucose drip in conjunction with the indwelling nasal catheter has been a distinct advance in the postoperative care of these children, not only in that it provides greater comfort, but also in that normal body chemistry is restored and toxins relieved in the quickest possible manner.

939 Pacific Mutual Building.

DISCUSSION

WILLIAM J. NORRIS, M. D. (1136 West Sixth Street, Los Angeles).—The number of cases of ruptured appendices mentioned by Doctor Baumgartner is sufficient reason

for bringing up this subject even more frequently than has been the case in the past.

There are certain facts that should be borne in mind when examining children in an effort to determine the presence or absence of an inflamed appendix. The approach to the patient should be studied, and sufficient time taken to gain the child's confidence in order that real muscle spasm may be differentiated from the spasm present in an apprehensive child.

The existence of diarrhea, associated with a ruptured appendix, is far more common than seems to be generally recognized, so that one should not be misled, as Doctor Baumgartner has indicated, by the presence of symptoms not commonly associated with this condition. A rectal examination will frequently make a diagnosis, and is altogether too commonly overlooked.

The question of when to operate is always one which gives rise to differences of opinion. The only cases, in my humble opinion, which should be observed, are those in which a definite history of improvement before the time of consultation has been obtained. If a child, said to have been an extremist two or three days previous to the time of its being seen by the surgeon, has definitely improved in every way, and there is evidence of localization, it would seem advisable to wait for further localization. With this one exception, I believe that operation is indicated following the restoration of body fluids.

The continuous drip, associated with an indwelling stomach tube passed through the nose, has without question saved many lives, and, as the essayist has stated, should be routine treatment where indicated.

In a series of one hundred cases which immediately preceded this past one hundred cases, the percentage of ruptured appendices was sixty-five in contrast to the 55 per cent just reported. This should encourage us to continue our efforts to educate parents and assist doctors in making early diagnoses.

✽

EZRA S. FISH, M. D. (9615 Brighton Way, Beverly Hills).—Doctor Baumgartner's paper brings out forcibly the high incidence of perforated appendices that occur in children. While it is true that perforation of the appendix is prone to occur more quickly in childhood, the chief reason for the high incidence, as Doctor Baumgartner has emphasized, is delay.

One would not think it necessary that so much emphasis should have to be placed upon the fact that appendicitis does occur in childhood, and upon the necessity of early diagnosis.

Apparently, the idea of dietary indiscretions—food upsets and stomach upsets, causing fever and abdominal pain—is so firmly imbedded in many parents' minds that the possibility that their child has an inflamed appendix does not occur to them. Many parents, further, are under the impression that children do not develop appendicitis.

To remove such misconception and misunderstanding, it is obviously necessary that the danger of appendicitis be continuously brought to their attention by such a paper as Doctor Baumgartner has presented here. I agree entirely with him in his plea that the medical profession add their efforts to those of the insurance companies and other agencies in developing an educational program that will make the public, first, appendix-conscious and, second, fearful of the danger of delay.

✽

GEORGE THOMASON, M. D. (1219 Hollingsworth Building, Los Angeles).—Any discussion is profitable that will make clearer a disease ordinarily dangerous at any age, but doubly so in the very young. Doctor Baumgartner has thrown considerable additional light on the subject in his illuminating paper.

In young children acute appendicitis is certainly more treacherous than it is in later life, because of:

1. Greater difficulty in accurate early diagnosis.

2. The greater frequency with which cathartics are given; in which case, as Lord Moynihan states, "the mere giving of a laxative is indication enough for instant operation," but which procedure, unfortunately, is not sufficiently frequently adopted because of the persistent belief on the part of parents that the case is one of indigestion,

and more purgation is likely to be resorted to rather than the calling of a physician.

3. The relative shortness of the omentum in children, preventing the proper functioning of this tissue in walling off the appendix area as it so helpfully does in adult life. Thus general peritonitis is made more possible in children than in cases of appendicitis later in life.

4. The thinness of the appendiceal wall in children undoubtedly leads to more frequent rupture of the appendix in children.

5. The comparative inadequacy of its blood supply, which is a terminal blood supply in the appendix, making more possible rapid degenerative processes, particularly in the meso-appendix, extends only half the length or less toward the tip of the appendix. This is illustrated in Doctor Baumgartner's paper, in that he states 55 per cent of the cases had ruptured.

6. In children the usual regular sequence of symptoms and findings is by no means so constant, therefore resulting too frequently in a wrong or a delayed diagnosis of the true condition.

In dealing with children suspected of having acute appendicitis, one should surely constantly keep in mind the possibility of pneumonia. There are, undoubtedly, cases in which children are operated for supposed acute appendicitis, and in which pneumonia is an apparent postoperative complication, when, in fact, it is primarily a case of pneumonia in which an appendectomy has been performed.

Adams and Berger reported a typical series of 145 cases of pneumonia in patients between two and fifteen years of age, in 17.5 per cent of which the diagnosis was acute appendicitis.

In every case the chest should be very carefully examined. In pneumonia in a child, there is usually a higher temperature and higher leukocyte count, a different type of breathing, and the noticeable characteristic movement of the alae nasi, but often the temperature and leukocyte count may at times fail to lead one to a correct differentiation.

The outline Doctor Baumgartner gives so specifically with reference to the postoperative care is to be most highly commended. We believe it a good plan to siphon the indwelling nasal tube at different intervals and then to close it for a time, unless nausea be present, in order that the upper intestinal secretions be not entirely lost through constant drainage.

LATENT SYPHILIS*

By WILLIAM H. GOECKERMAN, M. D.
Los Angeles

DISCUSSION by George V. Kulchar, M. D., San Francisco; Harry E. Alderson, M. D., San Francisco; Louis F. X. Wilhelm, M. D., Los Angeles.

WEBSTER defines the meaning of the term latent as not visible or apparent, concealed, dormant. Strictly speaking these meanings can be applied to a syphilitic infection, with reservations only. It should be recalled that the process may be pathologically or biologically active, yet not apparent by any clinical examination at present at our disposal. I will, therefore, use the term as meaning nothing more than clinically not recognizable syphilitic infection at the time of examination. A clinical diagnosis of latent syphilis assumes a very careful physical examination by all the means at the command of modern medicine. If such an examination is negative, the diagnosis must rest on a positive serologic test, on a clear-cut history of infection, in the female on the birth

of a syphilitic child, under special circumstances on gland puncture or biopsy, and finally a necropsy. The common knowledge, that we may be dealing with a clinically unrecognizable infection in the presence of a pathologically and biologically active process, presents a fascinating but at times difficult treatment problem, both from the standpoint of the individual and the public health.

COMMENT

There seems to be no division of opinion on the necessity of systematic treatment to prevent spread of a syphilitic infection, including transference of the disease to the progeny. When the probability of contagiousness is still present and the patient is not intolerant to the drugs now usually employed, treatment is obviously indicated. When it is a question, however, of the individual's future welfare and the prevention of late complications, the treatment problem becomes decidedly more complex and should not be met in a routine manner. Various modifying factors must be considered before deciding on the course to be pursued. Most observers no longer accept Ehrlich's idea of "therapia sterilisans magna," in the treatment of syphilis, except possibly in the very earliest stages of the infection. In the latent stage the infected individual's immunity mechanism becomes the deciding factor. The chief function of antisyphilitic treatment at this stage is to increase the efficiency of this mechanism. How effectively this can be done is still debatable. There are some who believe that modern treatment predisposes to, rather than prevents late internal complications. Attention has also frequently been called to the possibility of the arsphenamins and heavy metals producing injury to vital organs, which only becomes evident many years later. Probably the only way the exact value of modern treatment can be appraised is a comparison of a large series of patients observed over a whole lifetime, treated as well as untreated. Obviously this is practically an impossibility at the present time. Bruusgaard¹ was able to study a fairly large group, which had never received any treatment, years later. This group was seen in the early and secondary stages, and therefore, not strictly confined to a group that has achieved latency. None the less his findings are significant. According to his studies, untreated syphilis usually runs a benign course, and may frequently be completely eliminated by the patient's own powers of immunity. He makes no claims, however, that might contraindicate modern treatment. His data, also in my opinion, do not speak against judicious treatment. Since treatment must be carried on, let us consider the factors which determine the type, and amount of it in a given case during the latent period.

AGE AND LATENT SYPHILIS

Obviously a youthful individual, sexually active, with the infection of a few years' standing, and viscera in good condition, presents a different problem from the individual who shows no detectable clinical evidence after having carried the infection for many years, whose sex-life has be-

* Read before the Dermatology and Syphilology Section of the California Medical Association at the sixty-fourth annual session, Yosemite National Park, May 13-16, 1935.